EXPRESS MAIL NO. EL 980525 025 US

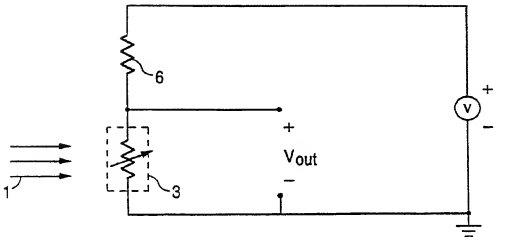

Fig. 1
(PRIOR ART)

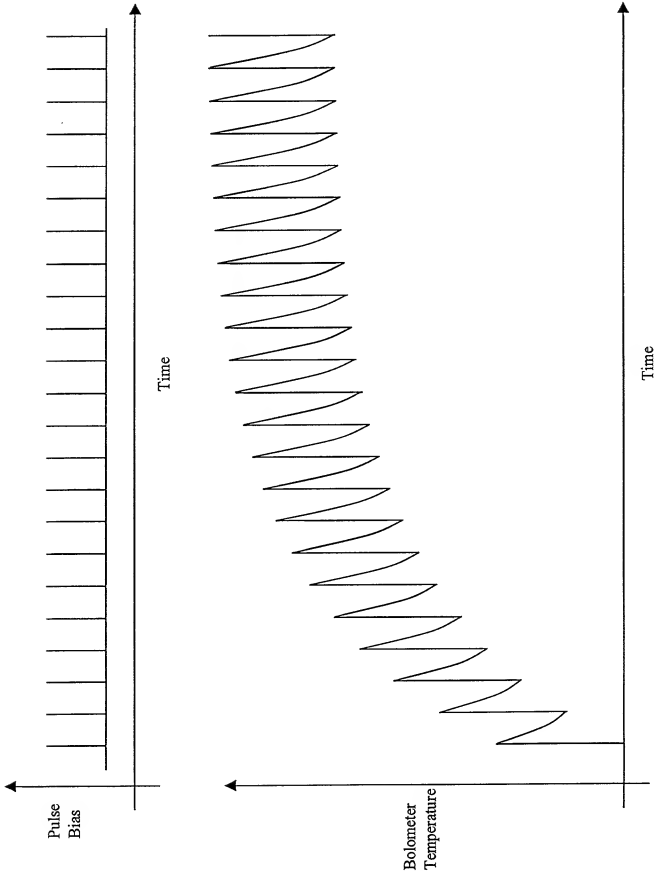

Fig. 2

Desired Range of
Substrate Temperature
Maximum Range
Minimum Range
Vout
Tmin
Tmax
Substrate Temperature

Fig. 3

Desired Range of
Substrate Temperature
Maximum Range
Minimum Range
Vout
Tmin
Tmax
Substrate Temperature

Fig. 4

Desired Range of Substrate Temperature
Maximum Range
Minimum Range
Average Vout
Substrate Temperature

Fig. 5

Signal Range
Min
Max
Number of Elements
Average Vout

Fig. 6

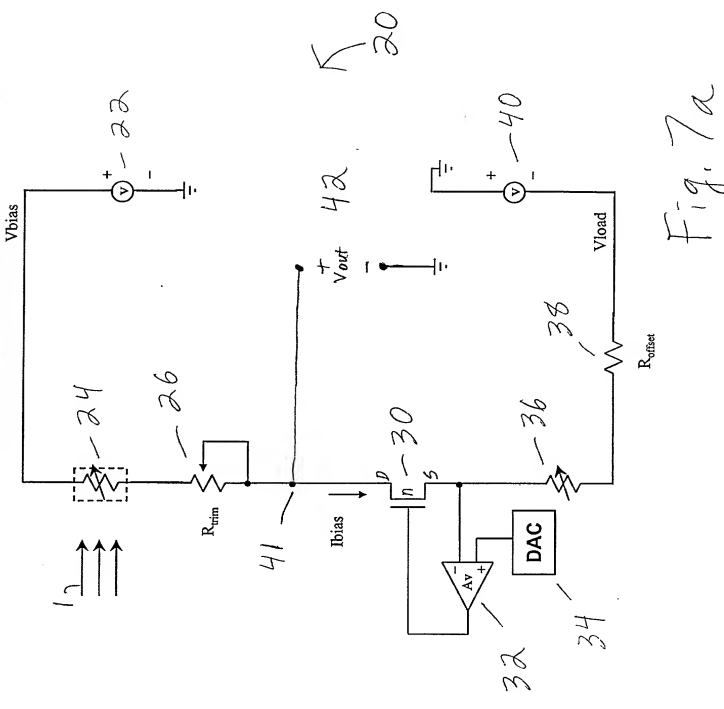
20
22
Vbias
24
26
Rtrim
41
42
Vout
Ibias
30
D
S
36
38
Vload
Roffset
40
DAC
Av
32
34

Fig. 7a

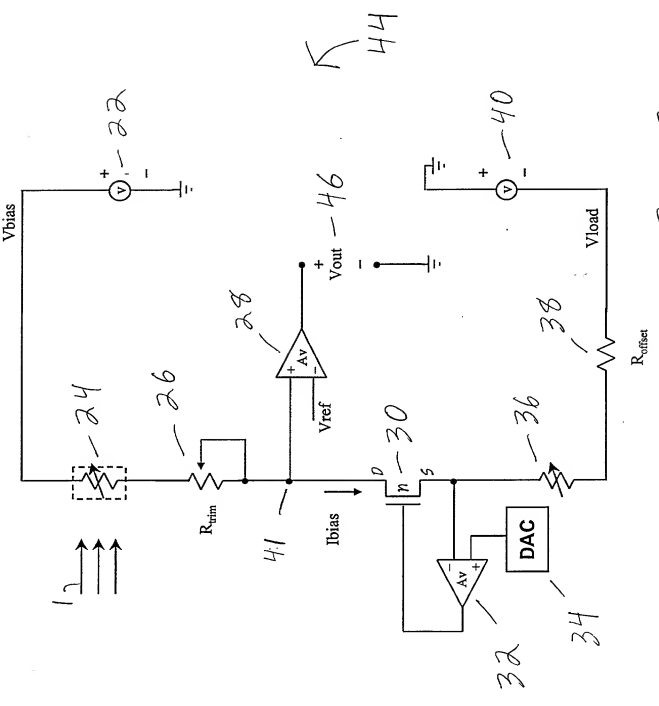
Vbias
Vout
Vref
Ibias
Vload
Av
DAC
n
p
s
Rtrim
Roffset
22
24
26
28
30
32
34
36
38
40
41
44
46

Fig. 7b

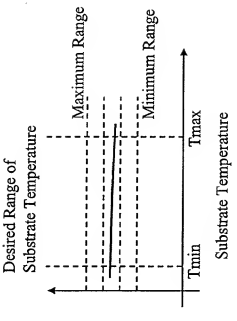
Desired Range of
Substrate Temperature
Maximum Range
Minimum Range
Vout
Tmin
Tmax
Substrate Temperature

Fig. 8

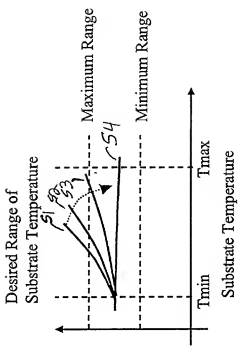
Desired Range of
Substrate Temperature
Maximum Range
Minimum Range
Vout
Tmin
Tmax
Substrate Temperature

Fig. 9

UNCLASSIFIED

Fig. 10

Fig. 11

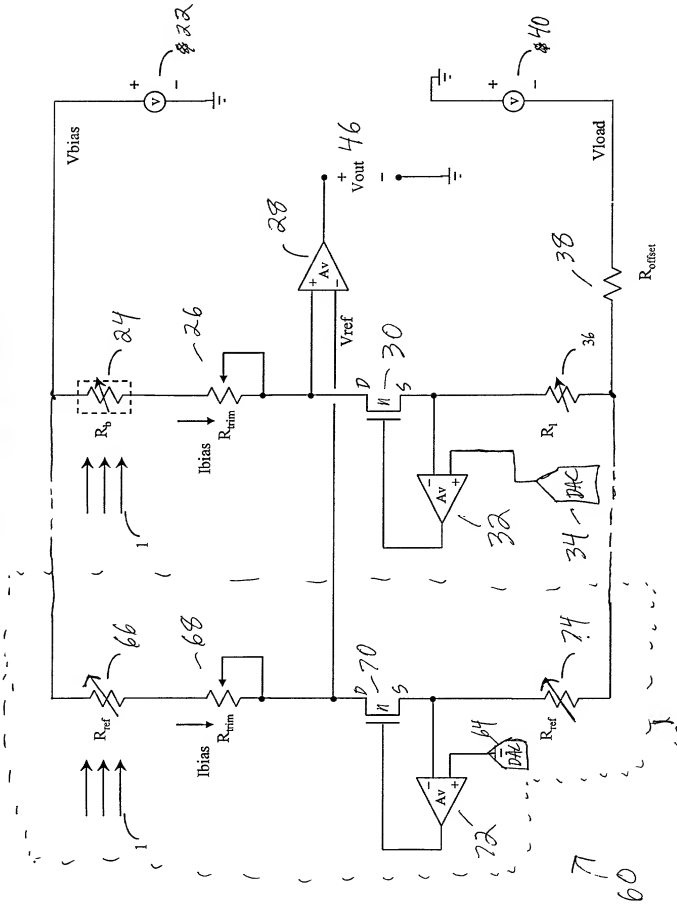
Vbias
Vout
Vload
Vref
Av
DAC
Ibias
R_{trim}
R_{ref}
R_b
R_l
R_{offset}
22
24
26
28
30
32
34
36
38
40
46
60
62
64
66
68
70
72
74

Fig. 12

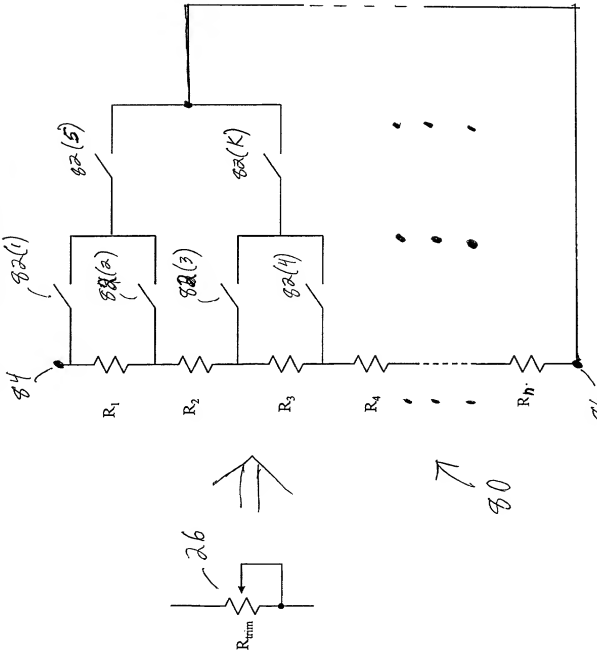

Fig. 13

PATENT APPLICATION

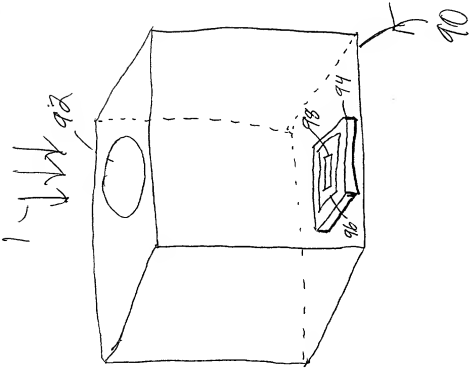

Fig. 14

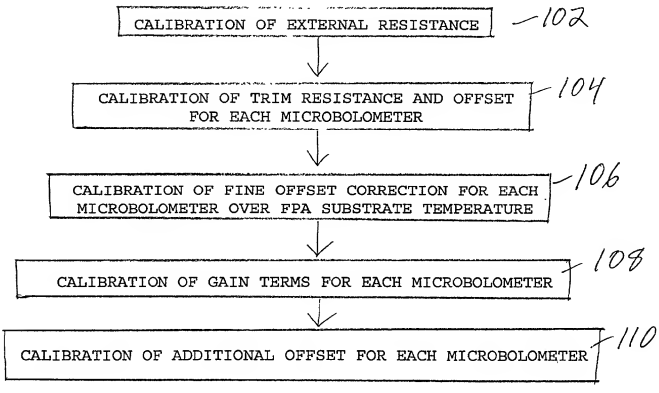

FIG. 15

PDOCID: WO 2005/124292 A2

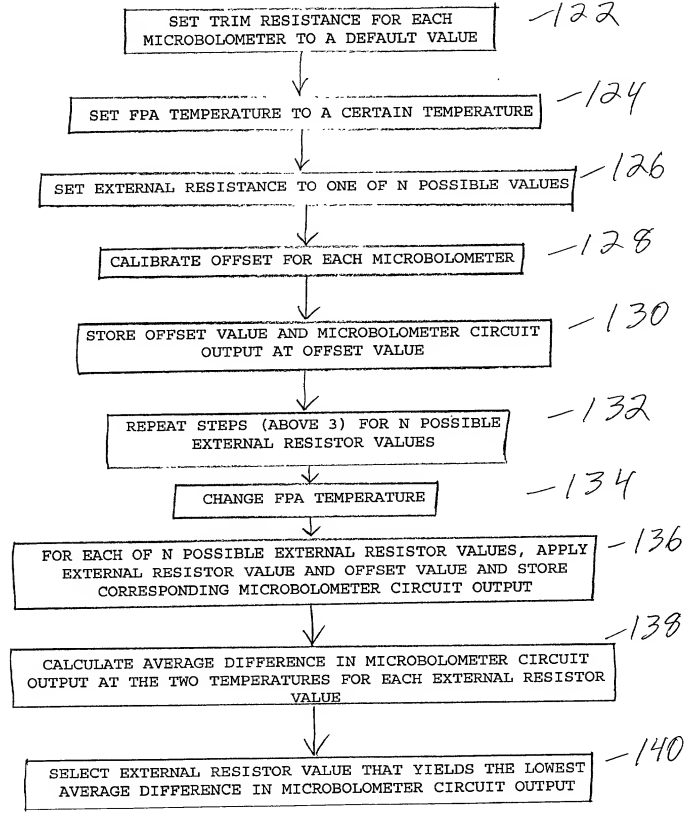
SET TRIM RESISTANCE FOR EACH MICROBOLOMETER TO A DEFAULT VALUE
122
SET FPA TEMPERATURE TO A CERTAIN TEMPERATURE
124
SET EXTERNAL RESISTANCE TO ONE OF N POSSIBLE VALUES
126
CALIBRATE OFFSET FOR EACH MICROBOLOMETER
128
STORE OFFSET VALUE AND MICROBOLOMETER CIRCUIT OUTPUT AT OFFSET VALUE
130
REPEAT STEPS (ABOVE 3) FOR N POSSIBLE EXTERNAL RESISTOR VALUES
132
CHANGE FPA TEMPERATURE
134
FOR EACH OF N POSSIBLE EXTERNAL RESISTOR VALUES, APPLY EXTERNAL RESISTOR VALUE AND OFFSET VALUE AND STORE CORRESPONDING MICROBOLOMETER CIRCUIT OUTPUT
136
CALCULATE AVERAGE DIFFERENCE IN MICROBOLOMETER CIRCUIT OUTPUT AT THE TWO TEMPERATURES FOR EACH EXTERNAL RESISTOR VALUE
138
SELECT EXTERNAL RESISTOR VALUE THAT YIELDS THE LOWEST AVERAGE DIFFERENCE IN MICROBOLOMETER CIRCUIT OUTPUT
140

FIG. 16

120

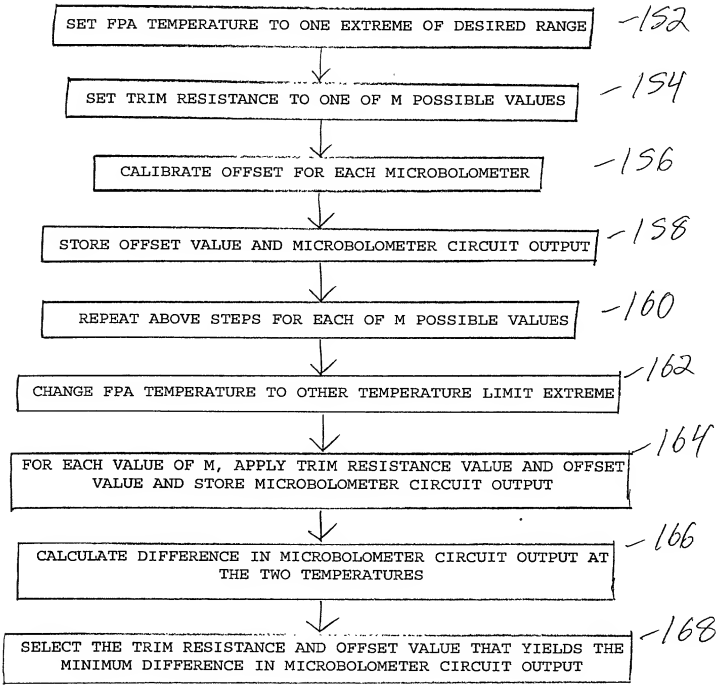
SET FPA TEMPERATURE TO ONE EXTREME OF DESIRED RANGE
152
SET TRIM RESISTANCE TO ONE OF M POSSIBLE VALUES
154
CALIBRATE OFFSET FOR EACH MICROBOLOMETER
156
STORE OFFSET VALUE AND MICROBOLOMETER CIRCUIT OUTPUT
158
REPEAT ABOVE STEPS FOR EACH OF M POSSIBLE VALUES
160
CHANGE FPA TEMPERATURE TO OTHER TEMPERATURE LIMIT EXTREME
162
FOR EACH VALUE OF M, APPLY TRIM RESISTANCE VALUE AND OFFSET VALUE AND STORE MICROBOLOMETER CIRCUIT OUTPUT
164
CALCULATE DIFFERENCE IN MICROBOLOMETER CIRCUIT OUTPUT AT THE TWO TEMPERATURES
166
SELECT THE TRIM RESISTANCE AND OFFSET VALUE THAT YIELDS THE MINIMUM DIFFERENCE IN MICROBOLOMETER CIRCUIT OUTPUT
168

FIG. 17

150

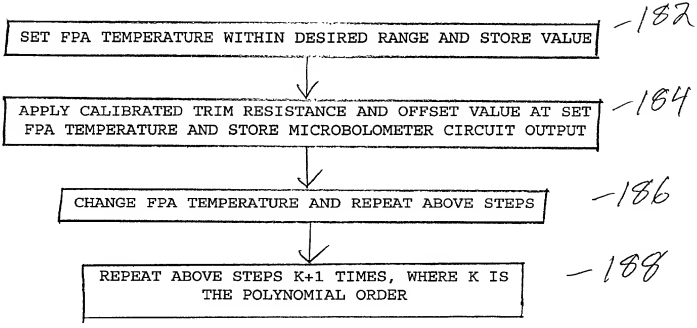

FIG. 18

EXPRESS MAIL

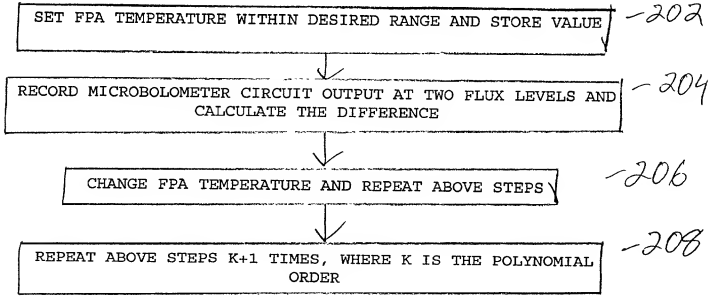

FIG. 19

200

PATENT

RDAC value	ODAC value	Pixel output value at T1
1	$ODAC_1$	40%
2	$ODAC_2$	45%
3	$ODAC_3$	50%

Fig. 20

RDAC value	ODAC value	Pixel output value at T1	Pixel output value at T2
1	$ODAC_1$	40%	20%
2	$ODAC_2$	45%	50%
3	$ODAC_3$	50%	80%

Fig. 21

RDAC value	ODAC value	Pixel output value at T1	Pixel output value at T2	Difference (between output at T1 and T2)	
1	$ODAC_1$	40%	20%	20%	
2	$ODAC_2$	45%	50%	5%	← minimum difference
3	$ODAC_3$	50%	80%	30%	

Fig. 22

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Fig. 23

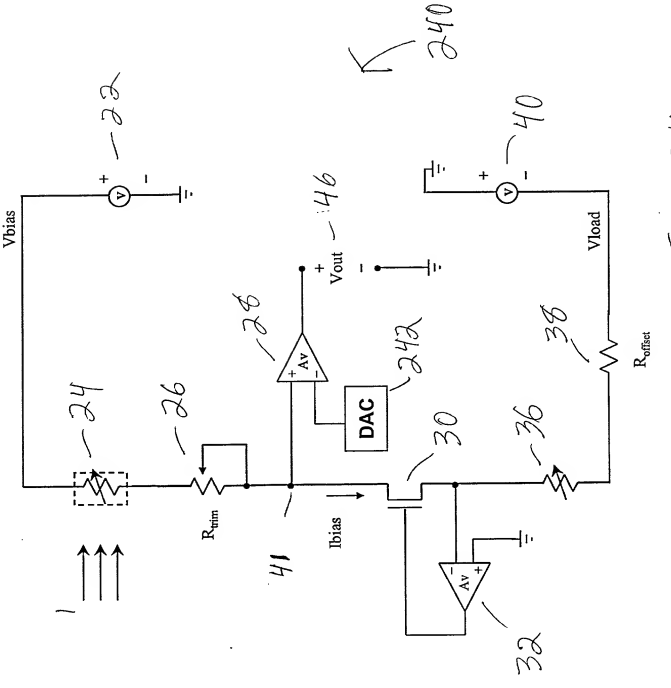
240
22
40
Vbias
Vout
46
28
Av
DAC
242
38
24
26
30
36
Vload
Rtrim
Roffset
Ibias
41
1
32
Av

Fig. 24

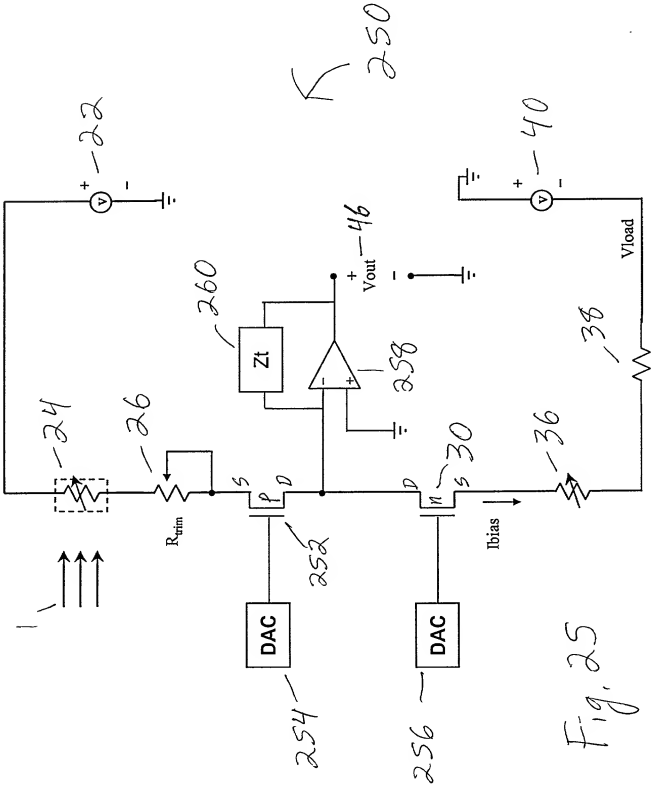
250
22
Vbias
24
26
Rtrim
260
Zt
Vout
46
258
40
Vload
38
Roffset
30
36
Ibias
252
DAC
254
DAC
256

Fig. 25

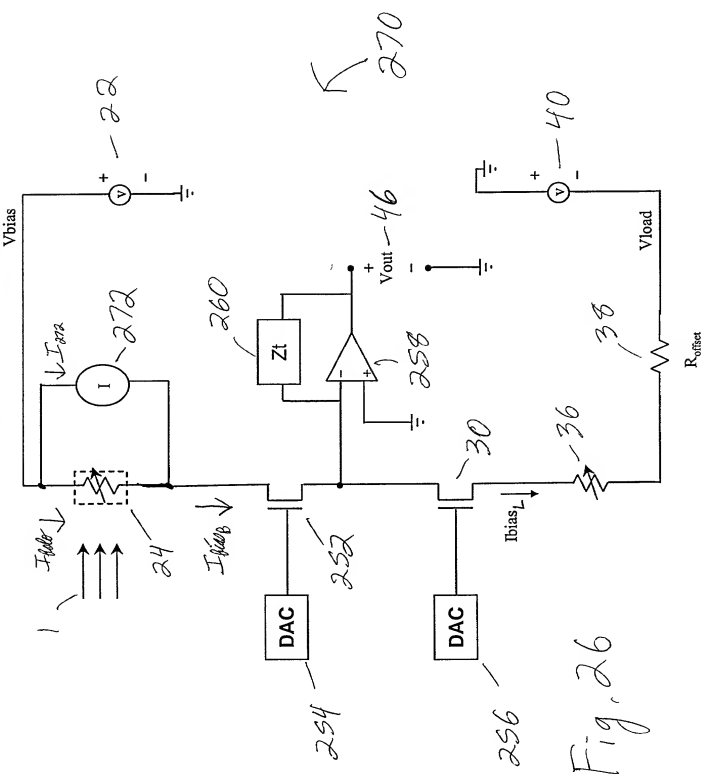
270
22
40
Vbias
Vload
Vout
46
260
Zt
258
272
I_{src}
I_{bias_B}
I_{bias_L}
R_{offset}
38
36
30
34
32
DAC
254
DAC
256
1

Fig. 26

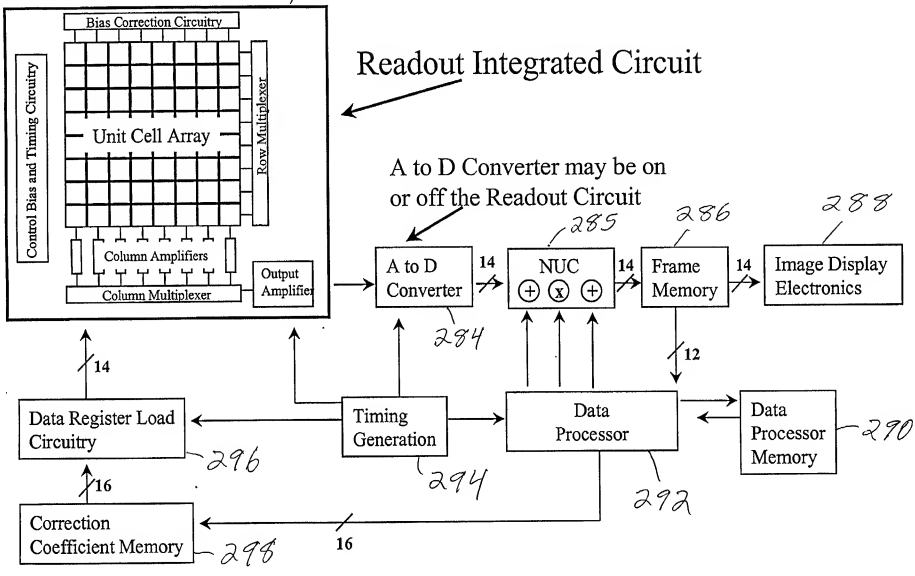
282
Bias Correction Circuitry
Control Bias and Timing Circuitry
Unit Cell Array
Row Multiplexer
Column Amplifiers
Column Multiplexer
Output Amplifier
Readout Integrated Circuit
A to D Converter may be on or off the Readout Circuit
A to D Converter
284
14
NUC
285
14
Frame Memory
286
14
Image Display Electronics
288
12
Data Register Load Circuitry
296
14
Timing Generation
294
Data Processor
292
Data Processor Memory
290
16
Correction Coefficient Memory
298
16
280

Fig. 27